

**Patent claims:**

- 1) A method for monitoring signal processing units for sensors, which each detect the individual process control quantities or process measured values of a process, **characterized by** an at least redundant processing of the sensor data in two identical signal processing units (43, 31, 46 and 44, 32, 45), which are each evaluated and checked for plausibility, independently and separately from one another, by means of at least two processing devices (43, 44) in two evaluation devices (31, 32), whereby the sensor data are transmitted between the one processing device (43, 44) and the one evaluation device (31, 32) through separate signal lines (60, 61).
- 2) A method in accordance with claim 1, **characterized in that** the sensor data that are separately evaluated and checked for plausibility in every evaluation device (31, 32) are exchanged by way of an interface between the evaluation devices (31, 32).
- 3) A method in accordance with claim 1 or 2, **characterized in that** sensor data and the condition information of the specific other evaluation unit that have been evaluated and checked for plausibility are sent to a superordinate control device of the vehicle by each evaluation device (31, 32), independently of the other one.
- 4) A method in accordance with one of the claims 1 to 3, **characterized in that** the sensor data and condition information of the specific other evaluation unit (31, 32), which have been evaluated and checked for plausibility, are transmitted to the control device of the vehicle by way of internal separate signal lines (49, 50) by way of one data bus each (47).
- 5) A device for monitoring signal processing units for sensors, which determine the individual process control quantities or process measured values of a process, **characterized by** at least two identical signal processing units (43, 31, 46; 44, 32, 45) for the redundant processing of the sensor data, with at least two processing devices (43, 44) and two evaluation devices (31, 32), in which the sensor data are evaluated and checked for plausibility independently of and separately from one another, whereby each processing device (43, 44) is connected with the specific evaluation device (31, 32) by way of separate signal lines (60, 62), and the sensor data are transmitted between the one processing device (43, 44) and the specific evaluation device (31, 32) by way of the separate signal line (60, 61).
- 6) A device in accordance with claim 5, **characterized in that** the sensor data, which are separately evaluated and checked for plausibility in every evaluation

device (31, 32), are exchanged by way of an interface between the evaluation devices (31, 32).

- 7) A device in accordance with claim 5 or 6, **characterized in that** every evaluation device (31, 32), independently of the others, sends the sensor data and the condition information of the other evaluation unit, which are evaluated and checked for plausibility, to a vehicle control device.
- 8) A device in accordance with one of the claims 5 to 7, **characterized in that** every evaluation unit (31, 32) is connected with a data bus (45, 46) by way of an internal separate signal line (71, 72), and the sensor data and condition information of the specific other evaluation unit (31, 32) that have been evaluated and checked for plausibility are transmitted to the vehicle control device by way of the specific data bus (45, 46).